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ABSTRACT

Ten job inventories were constructed for survey of 11 Air Force career ladders. Background variables designed to assess task-related information were included in each inventory. A replication of a previous study of contributions of technical advisers to inventory construction supported the earlier finding that airmen at supervisory skill levels provide the best job information. Broad statements of work designed to discriminate between job types on a more global level than task statements were included in eight job inventories. Trial answer sheets designed to be scored by optical scanning devices were administered on two surveys. Inventory constructors predicted job types for all career ladders surveyed. Write-in information from administrative surveys was reviewed, and significant contributions were added to job inventory content. Inventory responses were keypunched and verified in preparation for electronic data processing. (Author)

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AFHRL-TR-69-27

CONSTRUCTION AND ADMINISTRATION OF TEN AIR FORCE JOB INVENTORIES

By

Clyde C. Mayo

Lifson, Wilson, Ferguson, and Winick, Inc.

PERSONNEL RESEARCH DIVISION
Lackland Air Force Base, Texas

October 1969

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AIR FORCE HUMAN RESOURCES LABORATORY

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FOREWORD

This report, prepared by Lifson, Wilson, Ferguson, and Winick, Inc. under Contract F41609-68-C-0016, is one of three published as a product of this contract. The other reports in the series are AFHRL-TR-69-35, *A Method for Determining Job Types for Low Aptitude Airmen,* and AFHRL-TR-69-32, *Three Studies of Job Inventory Procedures: Selecting Duty Categories, Interviewing, and Sampling.* Clyde C. Mayo was the Project Director. Dr. Joseph E. Morsh monitored the contract for the Personnel Research Division. Printed materials used in the study were reproduced by Personnel Research Division, Air Force Human Resources Laboratory.

This study was performed under Project 7734, Development of Methods for Describing, Evaluating, and Structuring Air Force Occupations; Task 773401, Development of Methods for Collecting, Analyzing, and Reporting Information Describing Air Force Specialties.

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ABSTRACT

Ten job inventories were constructed for survey of 11 Air Force career ladders. Background variables designed to assess task-related information were included in each inventory. A replication of a previous study of contributions of technical advisers to inventory construction supported the earlier finding that airmen at supervisory skill levels provide the best job information. Broad statements of work designed to discriminate between job types on a more global level than task statements were included in eight job inventories. Trial answer sheets designed to be scored by optical scanning devices were administered on two surveys. Inventory constructors predicted job types for all career ladders surveyed. Write-in information from administrative surveys was reviewed, and significant contributions were added to job inventory content. Inventory responses were key-punched and verified in preparation for electronic data processing.

SUMMARY

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Problem

The job inventory is presently used by the Air Force as an instrument for studying Air Force occupational structures. The purpose of this study was to investigate several problems related to the construction and administration of job inventories. Specifically, the study was designed to provide data for development of new approaches to occupational surveys and to consider the utility of certain procedural and format modifications. The areas of investigation included:

1. Use of background questions to elicit task-related information.
2. Use of a relative time spent rating factor to collect career-wide experience data.
3. Use of summary work statements to facilitate job typing.
4. Use of job type predictions to ensure that task information included in an inventory covers all aspects of the job.
5. Assessment of the quantity of inventory modifications contributed by advisers at different skill levels.
6. Use of special answer sheets to permit processing by optical scanning.
7. Documentation of clerical effort and materials required for administration of occupational surveys to provide data for planning future surveys.

Approach

Eleven Air Force career ladders were surveyed. From source materials such as the *Airman Classification Manual*, training standards, and organizational charts, job inventory constructors developed preliminary lists of duties and tasks relevant to the career areas. To provide input from the field, inventories were reviewed by technical advisers working in the career areas. Predictions were made by inventory constructors concerning the number and nature of job types in each career ladder surveyed. Final versions of the job inventories, incorporating information and suggestions from the technical advisers, were printed and administered to job incumbents.

Each inventory consisted of duty-task lists to be rated on a relative time spent scale, work area or summary statements to be rated on a work experience scale, and background questions designed to provide task-related information. Career-wide experience data on individual tasks were collected through the use of a "time spent during entire career" rating factor. Broad summary work statements were included as a supplement to task statements in an attempt to minimize the number of variables necessary to differentiate among job types. For three inventories, rating spaces were eliminated from the duty-task pages and placed on special answer sheets to permit processing by an optical scanning device. Records were kept of clerical labor and materials used in inventory administration.

Results and Conclusions

Background questions. New uses of background questions were discovered, especially in the study of work context variables such as type of equipment maintained, working facilities, and unit mission. A method of obtaining training information was designed in which equipment systems maintained were listed, and respondents were asked to indicate completion or non-completion of advanced courses on particular systems. This method replaced the previous one in which all courses offered were listed by name and course number.

Career-wide experience. The rating concept of "relative time spent" was expanded in a scale designed to collect career-wide experience data on individual tasks. Subjects rated tasks performed in their present jobs on a relative time spent scale, and then using the same scale, they rated all tasks performed during their entire career. The availability of career-wide data should enable job analysts to determine job types on a longitudinal basis.

Work summary statements. It was generally feasible to summarize task statements with supplementary work area statements. The work area statements were not intended to substitute for task statements; rather, they should permit the use of fewer variables to differentiate among job types.

Predicted job types. An attempt was made to improve inventory construction by having constructors predict the nature and number of job types within a given career ladder. Predictions were made after publications, organizational charts, advisers, and other sources were consulted. Information gathered for the prediction of job types provided a functional categorization of work activities. Such predictions should be useful in uncovering broad work areas for which task information might not otherwise be adequate.

Contributions by advisers at different skill levels. When mechanical and administrative-general career ladders were studied in equal proportions, superintendent and technician level advisers contributed more to inventory modification and enlargement than did journeyman and apprentice levels. A large majority of the contributions of superintendents and technicians dealt with journeyman and apprentice type tasks rather than with supervisory tasks. These findings should be useful in anticipating the kinds of contributions which can be expected from various levels of technical advisers.

Special answer sheets. Two new formats were incorporated into three of the job inventories. For both formats, rating spaces were eliminated from the duty-task pages and placed on separate answer sheets on which the numbers indicating rating alternatives for each task were printed. Respondents were simply required to mark the appropriate number. One of these formats was designed to be recorded by key-punch operators, while the other was to be interpreted by an optical scanning device. It was anticipated that optical scanning will prove a much more economical method of data recording than key-punching.

Clerical effort and materials. Records of clerical labor and material used were maintained to provide data for planning future occupational surveys. Clerical labor was distributed between two phases. The first included selecting address cards and arranging distributions of test administrators, affixing address labels to letters, copying survey information, and assemblying associated correspondence. The second phase consisted of boxing, packaging, and mailing. Approximately twice as many hours were required for the second phase as were required for the first. Preparation for packaging and mailing 1,000 inventory booklets required about 3.2 hours, while 6.9 hours were needed for packaging and mailing. Materials for packaging 1,000 booklets included 16 boxes, 38 envelopes, and 250 feet of tape.

This summary was prepared by J.E. Morsh, Occuaptional Research Branch, Personnel Research Division, Air Force Human Resources Laboratory.

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CONSTRUCTION AND ADMINISTRATION OF TEN AIR FORCE JOB INVENTORIES

I. INTRODUCTION

The present study is one in a series designed to expand and improve the United States Air Force method of job analysis. The Air Force method, a synthesis of previous methods, produces data which are analyzable by electronic computer (Morsh, 1964; Morsh, Madden, & Christal, 1961). Job inventory booklets are used for data collection. The inventory constructor, usually a research psychologist, begins an analysis by compiling a list of tasks from publications describing work content in the career ladder under study. Next, in interview sessions, he asks technical advisers working in the career ladder to render the task lists more complete and accurate. The resulting preliminary job inventory is mailed to technical advisers in the field for further changes and additions which are incorporated into the final instrument. The final job inventory is printed and administered to incumbents stationed throughout the world. When the booklets are returned, written-in information is abstracted clerically, and other data are key-punched and processed by electronic computer.

In several recent papers in the series, one of the problems discussed was the nature of task information produced by technical advisers at different skill levels. Two of the studies (Archer & Fruchter, 1963; Krebs, 1966) indicated that lower skill level advisers produce different kinds of information than do higher level advisers. A subsequent study (Mayo, 1968) confirmed this finding, while also showing that the quantity of information produced by lower level advisers was far below that produced by higher level advisers. This study also demonstrated an expanded use of background questions in job inventories. The background items were designed to elicit task-related information which would be helpful in the interpretation of responses to task statements. Further aspects of the study included expansion of the quantity and types of interviews used and investigation of new inventory formats.

In the present study, ten job inventories were used to survey 11 Air Force career ladders. A number of specific goals were defined:

1. Use of background questions would be expanded to elicit task-related information.
2. Career-wide experience data would be collected through use of a relative time spent rating factor.
3. Use of broad summary work statements to aid job typing would be investigated.
4. Job types would be predicted by inventory constructors.
5. The clerical effort required in administration of a typical survey would be documented.
6. Special answer sheets designed for optical scanning would be used.
7. The quantity of modifications produced by advisers at different skill levels would be further investigated.

The following career ladders or combinations of career ladders were surveyed:

234X0	Precision Photoprocessing
253X0/A	Weather
301X0	Aircraft Radio Repair
301X1	Aircraft Electronic Navigation Equipment Repair
325X0/A	Automatic Flight Control Systems
342X0/A	Flight Simulator
363X0	Communications and Relay Center Equipment Repair, Electro/Mechanical
423X0	Aircraft Electrical Repair
424X0	Aircraft Fuel Systems
563X0 566X0	Water and Waste Processing; Engineering Entomology

The approach to investigation of the various aspects of job inventory construction and administration was generally applicable across the ten inventories. These procedures, along with certain findings, are summarized to give an overview of the study. The more specific issues under investigation are discussed separately in subsequent sections of this report.

Source materials such as job training standards, the *Airman Classification Manual* (AFM 39-1), and organizational charts were reviewed by inventory constructors for the purpose of collecting and organizing under duty headings preliminary sets of tasks. Several technical advisers, usually five or six, from each career ladder were interviewed for further information. Most of the interview advisers were instructors at Air Force technical training centers. Prior to field review, the ten inventories had an average length of 225 tasks. Field reviewers contributed a mean of 62 tasks to each inventory, bringing the average number of tasks to 287. The mean number of duty categories per inventory was 13.

Three types of agencies were utilized in the administration of job inventory booklets to incumbents. These were Test Control Officers, Consolidated Base Personnel Offices, and individual units. Instructions for completing the inventories (shown in Appendix I) were included in the materials sent to the administering agencies. Upon receipt of the booklets from the administering agencies, written-in tasks were abstracted and analyzed; other data were key-punched. Samples ranged from 425 to 1,620 subjects; the mean was 1,234. The number of new tasks contributed per subject was 0.047, a value indicating that approximately one new task was added for each 21 participants. In a similar analysis (Mayo, 1968), 0.060, or one new task for each 15 participants, was reported.

II. VARIATIONS IN DUTY-TASK LIST ORGANIZATION

For the aircraft maintenance job inventories, duty categories were designated with usual action verbs such as "troubleshooting," "repairing," "modifying," or "inspecting." The Aircraft Fuel Systems Job Inventory (AFSC 424X0) incorporated a previously unused duty category, "Preparing for Maintenance." The rationale for this terminology lay in the fact that preparation of fuel systems for maintenance is a significant and time-consuming part of the job for aircraft fuel systems personnel. For example, fuel tanks must be defueled, depuddled, desealed, or purged prior to maintenance. Also, aircraft must be moored and the area roped off before work can begin.

In most inventories, there was need for three or four supervisory duties consisting of tasks performed by noncommissioned officers. In the Weather Career Ladder (AFSC 253X0/A), however, there were few supervisory activities. All incumbents were weather forecasters whose jobs required primarily the performance of operational weather and other meteorological functions and the analysis of charts and maps. Supervisory tasks were few enough to be listed under one duty, "Supervising Weather Operations."

The Civil Engineering Sanitation Career Field (AFSC 56XX0), which consists of two career ladders, was surveyed with one inventory. In order to limit the number of supervisory duties, a duty was designated "Performing General Supervision." This duty listed supervisory tasks which were similarly performed in both career ladders. Examples of such tasks were "Evaluate subordinates," "Maintain time cards," "Plan workloads," and "Schedule work assignments." Supervisory tasks requiring intimate knowledge of one or the other career ladder were listed in other supervisory duties.

III. BACKGROUND QUESTIONS

People-related Information

Background questions were designed to elicit both people-related and job-related information. People-related information enables the job analyst to discover work situations in which the characteristics of the worker influence the type of work performed. Education level, months of previous experience in the career ladder, method of assignment to the career ladder, and re-enlistment intention are examples of standard background items used to obtain people-related information.

Documentation of past experience was the purpose of background questions in several inventories. Incumbents in the Engineering Entomology Career Ladder (AFSC 566X0), for example, were responsible for learning large quantities of facts concerning pests, pesticides, and pest control equipment. The job inventory for this career ladder included questions designed to assess the incumbent's experience with such subject matter. With information of this nature, it would be possible to determine, for example, that responsibility for pest control equipment comes earlier in the entomologist's career than does responsibility for the collection and identification of pests or the chemical mixing of pesticides.

Most job inventories included a listing of official Air Force courses for which the respondent could indicate completion or noncompletion. Occasionally a career ladder was encountered, however, for which Air Force training agencies offer over 30 courses. Such a long list of courses becomes rather bulky in a job

inventory. This problem was particularly acute in the Aircraft Electronic Navigation Equipment (AFSC 301X1), Automatic Flight Control Systems (AFSC 325X0), and Aircraft Radio Repair (AFSC 301X0) inventories. Therefore, an alternate method of obtaining course information was developed. Respondents were asked to indicate major equipment systems worked on and whether they had completed courses for those particular systems. Such a method of obtaining training information was convenient for the three career ladders since courses were typically oriented around equipment systems. The listing of major systems offered inventory constructors an additional advantage. They were able to construct task lists at the level of components of systems without losing information about systems (i.e., particular combinations of components). Most systems in the three career ladders had components in common. Knowledge both of components and of overall systems was necessary for effective task performance.

Job-related Information

Job-related information is concerned with work context, as opposed to task information, which is concerned with work content. Most career ladders do not have uniform work contexts. Members of a given career ladder may be assigned stateside or overseas, for example. They may work in different major commands, each with a different mission. They may work in small or large units. There are many other work context variables in Air Force career ladders.

In the Aircraft Electrical Repair Career Ladder (AFSC 423X0), the job inventory assessed whether the incumbent was assigned to transient or permanent aircraft. The work context would be different in each case. Lengthy or long-range maintenance could be accomplished on permanent aircraft because the aircraft would return to base regularly, while maintenance on transient aircraft would be a one-time affair.

To some extent, work in the Flight Simulator Career Ladder (AFSC 342X0) was specialized according to type of aircraft simulated. Background questions were included in the job inventory to indicate the type of aircraft simulator represented.

In the Weather Career Ladder (AFSC 253X0), there were important variations in work context associated with kind and extent of weather forecasting performed. A background question in the job inventory gave respondents an opportunity to indicate whether they were engaged in forecasting for overseas flights, 24-hour global missions, airborne operations, or flying training.

In the Precision Photoprocessing Career Ladder (AFSC 234X0), several local variables controlled work context. Appropriate background questions were included in the corresponding job inventory to indicate types of clean room available, kind of laboratory to which assigned, and whether the installation was fixed or mobile. Sample background items are shown in Appendix II.

IV. EXPERIMENTAL FIELD REVIEWS

Six preliminary inventories were reviewed in the field by advisers at all four skill levels for the purpose of comparing the modifications to inventory content produced by members of the four different skill levels. Although such a study had been previously accomplished (Mayo, 1968), it was desirable to add more career ladders so that electrical-mechanical and general-administrative career ladders would be equally represented. The data from both studies were combined and treated as one.

Technical advisers were instructed to modify the content of preliminary job inventories in such a manner as to render them more accurate and complete. Table 1 presents the number of modifications produced per adviser within each career ladder. The results essentially duplicated those of the previous study. Superintendents produced the most modifications, followed by technicians, journeymen, and then apprentices. As in the previous study, modifications were classified into two categories: journeyman and supervisory. For all ten career ladders, 72.75 percent of the superintendents' modifications dealt with tasks at the worker level. Similarly, 80.66 percent of the technicians' modifications, 92.13 percent of the journeymen's modifications, and 96.20 percent of the apprentices' modifications dealt with such tasks. Thus most of the modifications, even those made by higher level advisers, pertained to worker tasks rather than to supervisory ones.

Advisers from some career ladders produced more modifications than those from other career ladders. Table 2 presents data on modifications produced regardless of skill level. It also lists the type of career ladder and the number of advisers per career ladder. It is noteworthy that advisers from electrical and mechanical career ladders

Table 1. **Job Inventory Modifications per Technical Adviser, Shown by Adviser Skill Level**

Career Ladder	Number of Modifications by Skill Level			
	Apprentice (3 Level)	Journey-man (5 Level)	Techni-cian (7 Level)	Super-intendent (9 Level)
Precision Photoprocessing (234X0)	0.80	1.96	3.44	1.92
Photo Interpretation (206X0)	1.30	0.30	2.60	5.10
Computer Repair (305X3)	0.40	4.40	1.70	3.20
Automatic Flight Control Systems (325X0)	0.90	2.40	1.78	5.84
Flight Simulator (342X0)	2.75	4.86	7.11	8.80
Teletype Repair (363X0)	2.05	2.92	4.23	4.10
Water and Waste Processing (563X0)	1.17	2.04	3.79	
Engineering Entomology (566X0)	0.78	1.13	1.15	1.00
Accounting and Finance (67XXX)	0.90	4.40	6.40	5.40
Medical Administrative (906X0)	0.90	1.70	2.20	2.30
Average	1.19	2.61	3.44	4.18

Table 2. **Job Inventory Modifications per Technical Adviser, Shown by Type of Career Ladder**

Career Ladder (AFSC)	Type of Career Ladder	No. of Advisers	Modifications per Adviser
342X0	Electrical	149	5.88
67XX0	Administrative	68	4.27
363X0	Mechanical	123	3.32
325X0	Electrical	136	2.73
305X3	Electrical	86	2.42
563X0	Mechanical	74	2.33
206X0	General	113	2.32
234X0	General	82	2.03
906X0	General	118	1.78
566X0	General	59	1.02

produced as many modifications, if not more, than did members of general and administrative career ladders, especially since the latter are assumed to require higher degrees of verbal ability on the part of incumbents.

V. TASK ATTRIBUTE RATING FACTORS

Respondents rated each task performed during their current assignments on a relative time spent scale. The concept of relative time spent was also applied to their entire careers in the form of a "time spent during entire career" secondary rating factor. This latter factor was designed to be a measure of experience during the respondent's entire military enlistment. In completing ratings on the secondary factor, respondents were instructed to rate all tasks performed on past assignments as well as those performed on present assignment.

For inventories constructed prior to the present study, respondents were instructed to indicate performance or non-performance on tasks before rating them. This requirement was abandoned in the present study since ratings imply performance.[1]

VI. SUMMARY WORK STATEMENTS

It is probable that many well-defined enlisted jobs may be described with a few brief statements as well as with a series of detailed task statements. The entire operation of test stands in the Jet Engine Mechanic Career Ladder (AFSC 432X0), for example, could be summarized with the statements "Maintain test stand," "Operate test stand," and "Load engines onto test stand." Such summary statements were included in the job inventories of the present study as supplements to task statements. Each work area statement summarized a series of tasks which appeared to be performed together. In the Weather Job Inventory (AFSC 253X0), for example, the statement "Process climatological data" was intended to summarize such task statements as "Extract and summarize information from weather charts and maps" and "Prepare objective forecast studies." The statement "Perform preventive pest control" was used in the Civil Engineering Sanitation Job Inventory (AFSC 56XX0) to summarize such tasks as "Evaluate changes in pest activity to prevent destructive outbreaks" and "Prepare recommendations for control of undesirable vegetation." The summary statements were rated on a work experience factor. It was anticipated that such broad statements of work areas would discriminate between job types for career ladders in which the mission or function was well-defined and organized. The summary statements were not, of course, expected to substitute for task statements. Appendix III shows sample inventory pages of duty-task lists and summary statements.

Table 3 presents the number of tasks and summary statements for eight job inventories, together with the ratio of summary statements to task statements. The obtained ratio reflects the average number of task statements covered by each summary statement in a particular inventory. For the eight job inventories, the average ratio of summary statements to task statements was 7.19.

Table 3. **Ratio of Number of Task Statements to Summary Statements**

Career Ladder (AFSC)	No. of Tasks In Job Inventory	No. of Summary Statements	Ratio
253X0	180	31	5.81
301X0	291	42	6.93
301X1	264	38	6.95
325X0	302	48	6.29
342X0	336	36	9.33
423X0	243	37	6.57
424X0	241	48	5.02
56XX0	362	34	10.65
Average			7.19

[1]In completing a job inventory according to the standard procedures, incumbents read through all of the task statements, indicate task performance by marking in a "Check if done" column, and add any tasks done which are not listed. They then go through the inventory booklet again and rate relative time spent on tasks they have checked. They may go through the booklet a third time to make ratings if a secondary task rating factor is included. In an attempt to streamline the procedure and also because indicating task performance on an answer sheet did not appear feasible, the "Check if done" step was omitted. As a result some incumbents thought they were required to rate all tasks in the inventory whether they performed them or not, with a consequent invalidation of their data.–Contract Monitor.

VII. SPECIAL INVENTORY FORMATS

The typical format for duty-task pages in inventory booklets has been one in which spaces reserved for ratings are located on the pages listing tasks. Two new formats were incorporated into three of the job inventories constructed during the present study. Both format changes involved the elimination of rating spaces from the duty-task pages and their placement on separate answer sheets. (Sample answer sheets are shown in Appendix IV.) Also, subjects were no longer required to write rating numbers; they simply marked the appropriate response in the series of numbers printed beside each task number on the answer sheets. The difference between the two new formats was that the first was designed to be recorded by key-punch operators while the second was to be interpreted by an optical scanning device. It was anticipated that optical scanning would prove a much more economical method of data recording than key-punching.

VIII. PREDICTED JOB TYPES

Based on information from background research and interviews, inventory constructors made predictions as to the nature and number of job types in all career ladders studied. Most of the job types predicted could be designated as standard; many, however, would be classified as special or unique. Among aircraft maintenance career ladders, standard job types fall into several categories: flight line, repair shop, supply, quality control, and supervisory-training.

In the Aircraft Radio Repair, Electronic Navigation Equipment Repair, and Automatic Flight Control Systems Career Ladders, it was predicted that all incumbents would tend to perform most of the tasks and that specialization would occur only where understaffing is not a problem. In the Aircraft Fuel Systems Career Ladder, a job type was predicted to include repairmen who devote considerable time to removing and replacing fuel cells, tanks, and panels. The Aircraft Electrical Repair Career Ladder had as predicted special job types work order dispatcher, battery shop worker, and aircraft maintenance inspector.

Unique job constellations were predicted for other career ladders studied. In the Precision Photoprocessing Career Ladder, several special job types were predicted, especially in larger units and in high acuity laboratories. These job types included quality control, production control, chemical analysis, chemical mixing, print processing, film processing, editing and inspecting, and supervising and training. In the Weather Career Ladder most incumbents were expected to engage in routine base weather forecasting. Several variations in the routine job type were predicted, however, depending on whether the unit engages in forecasting for long-range missions, flying training, or airborne operations. A special job type was predicted for small numbers of incumbents who perform complicated climatological analyses and solar flare forecasting. As mentioned earlier, supervisory tasks were not expected to constitute a heavy workload among Weather personnel.

Predicted job types were highly dependent on kind of equipment maintained in the Communications and Relay Center Equipment Repair Career Ladder because the teletype sets maintained vary greatly in principle of operation and construction. Incumbents also maintain cryptographic and telautographic equipment. Predictions in this career area included a higher level planning job type and possibly a supply job type.

Job types were difficult to predict in the Flight Simulator Career Ladder. They would depend on such variables as kind of aircraft simulated, kind of equipment systems simulated, and the number of crewmember tasks simulated.

In the Engineering Entomology Career Ladder, predicted job types included pesticide dispersal, equipment maintenance, supervisory-inspection-training, and other more isolated areas such as termite inspection and dispersal of herbicides. Predictions in the Water and Waste Processing Career Ladder indicated waste processing, water processing, and senior NCO job types. At some installations where the industrial activity is high, there would be an industrial waste disposal job type.

IX. CLERICAL LABOR AND MATERIALS

Records of clerical labor and materials were kept for the purpose of aiding manpower and supply planning in future job inventory administrations. Clerical labor was distributed between two phases. The first consisted of selecting address cards of test administrators, arranging distributions of subjects, affixing address labels to letters, copying survey information, and assembling associated correspondence. The second consisted of boxing, packaging, and mailing. Approximately twice as many hours were required to package and mail as were required to prepare for packaging and mailing. The data are presented in Table 4.

Table 4. **Clerical Time and Materials Required to Prepare and Mail 1,000 Job Inventory Booklets to Survey Administrators**

	Requirement for 1,000 Booklets	
	Hours	Materials
Phase I: Preparing for packaging and mailing	3.2	
Phase II: Packaging and Mailing	6.9	
Boxes containing 25-50 booklets		16 boxes[a]
Envelopes containing 1-12 booklets		38 envelopes[a]
Tape for securing boxes and envelopes		250 feet

[a]The figures for boxes and envelopes are meant to be taken jointly; for each 1,000 booklets both 16 boxes and 38 envelopes were required.

X. MAIL RETURN RATE

For the purpose of aiding future job inventory administrations, the quantity and quality of the mail return was studied. The term "quality of return" refers to whether booklets received were usable, rejected, or blank. Rejected booklets were those which were inappropriately completed. Blank booklets were those returned unadministered. Usable booklets were those appropriately completed according to instructions.

Figure 1 presents data on the quality and quantity of typical weekly returns averaged across three surveys in which attempts were made to obtain 3,000 subjects per survey. For a typical 3,000-subject survey, 86.5 percent of the booklets were accounted for 13 weeks after mailing. Of the total mailed, 52.3 percent were returned usable, 29.7 percent were returned blank, 4.7 percent were returned completed but were rejected, and 13.4 percent were unaccounted for. Approximately two-thirds of the booklets were accounted for seven weeks after mailing.

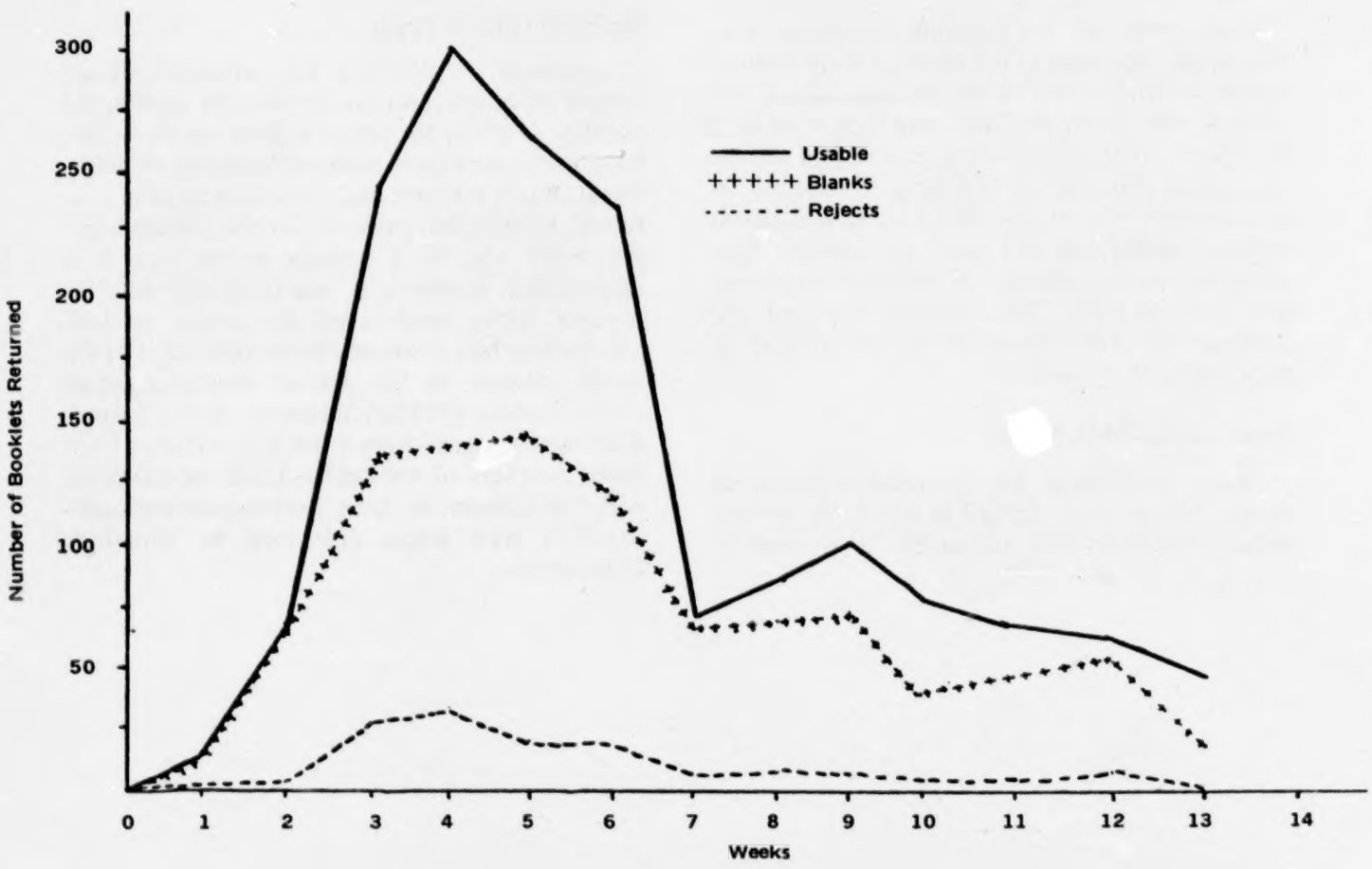

Fig. 1. **Weekly returns of job inventory booklets for a typical administration of 3,000 booklets.**

XI. SUMMARY AND CONCLUSIONS

General Summary

Ten job inventories were constructed for survey of 11 Air Force career ladders. Each inventory consisted of duty-task lists to be rated on relative time spent scales, summary work statements to be rated on a work experience scale, and background questions designed to elicit task-related information. Predictions were made concerning the number and nature of job types in each career ladder. Career-wide experience data on individual tasks were collected through the use of a "time spent during entire career" rating factor. Broad summary work statements were included as a supplement to task statements in an attempt to use fewer variables to differentiate among job types. For three inventories, rating spaces were eliminated from the duty-task pages and placed on special answer sheets. Records were kept of clerical labor and materials used in inventory administration. An experimental mail review of technical advisers was conducted.

Background Questions

New uses of background questions were discovered, especially in the study of work context variables such as type of aircraft maintained, size of photo laboratory available, and type of mission of weather forecasting units. A method of obtaining training information was designed in which respondents were presented with a list of equipment systems maintained and asked to indicate completion or non-completion of advanced courses on particular systems. This method replaced the previous one which listed all courses offered by name and course number.

Experimental Field Review

When mechanical and administrative-general career ladders were studied in equal proportion, superintendent and technician level advisers contributed more to inventory modification and enlargement than did advisers at the journeyman and apprentice levels. A large majority of the contributions of superintendents and technicians dealt with journeyman and apprentice tasks rather than with supervisory tasks.

Summarizing of Task Statements

It was generally feasible to summarize task statements with supplementary work area statements. The work area statements were not intended to substitute for task statements; rather, they served as instruments in a plan to use fewer variables to differentiate among job types.

Task Attribute Rating Factors

The rating concept of "relative time spent" was expanded in a scale designed to collect career-wide experience data on individual tasks. Subjects rated tasks performed at present and tasks performed during entire career on relative time spent scales. The collection of career-wide data enabled job analysts to determine job types on a longitudinal basis.

Prediction of Job Types

Inventory construction was enhanced by attempts of constructors to predict the nature and number of job types within a given career ladder. Predictions were made after publications, organizational charts, advisers, and other sources were consulted. Information gathered for the prediction of job types was of a broader nature than task information; however, it was frequently used to uncover broad work areas for which no task information had previously been collected. For example, advisers in the Aircraft Electrical Repair Career Ladder (423X0) indicated that a battery shop worker would have a job type separate from other members of the ladder. Until conversations with the advisers, no tasks involving battery maintenance had been collected by inventory constructors.

APPENDIX I. SAMPLE INSTRUCTIONS FOR COMPLETING INVENTORIES

INSTRUCTIONS FOR COMPLETING INVENTORIES IN WHICH TASK STATEMENTS AND SPACES FOR RATINGS WERE ON THE SAME PAGE

INSTRUCTIONS

1. To qualify for this survey you must have a Duty AFSC of 56330, 56350, 56370, 56630, 56650, 56670, 56690, and you must have been in the same duty assignment for at least six weeks.

2. The inventory is divided into three sections: Background Information, Duty-Task Lists, and Work Areas. Please complete them as follows:

a. First, fill in the Background Information Section.

b. Second, turn to the Duty-Task List Section. You are to make TIME SPENT (Present Assignment) ratings in column A on each task which is part of your present assignment. TIME SPENT (Present Assignment) means the total time you spend doing the task you are rating, compared with the time you spend on each of the other tasks you do. You use the rating "1" if you spend a very much below average amount of time on a task; you use "2" for below average time; and so on up to a rating of "7" if you spend a very much above average amount of time on the task. Leave blank the tasks you do not now perform.

c. Third, turn back to the beginning of the Duty-Task List Section. You are now to make TIME SPENT (Entire Career) ratings in column B on tasks you have performed during your entire career in the Civil Engineering Sanitation Career Ladder (AFSC 56XX0) including your present assignment. TIME SPENT (Entire Career) means the total time you have spent doing the task you are rating compared with the time you have spent on each of the other tasks you have done. Use the rating "1" if you have spent a very much below average amount of time on a task; use "2" for below average time; and so on up to a rating of "7" if you have spent a very much above average amount of time on a task. You will rate in column B all tasks you now perform plus tasks you performed in the past. Leave blank the tasks you have never performed.

d. Fourth, use the last page of the Duty-Task List Section to write in tasks performed in your career ladder which are not listed. Do not write in classified tasks.

e. Fifth, turn to the Work Area Section. Each Work Area statement is a summary of several of the task statements in the Duty-Task List Section. Remembering that you are now dealing with large summary work statements, make WORK EXPERIENCE ratings. WORK EXPERIENCE means the experience you have had in a work area compared to the other work areas listed. Rate a work area "1" if you have had almost no experience in it compared to other work areas; rate it "2" if you have had very little experience in it; and so on up to a rating of "7" if you have had an extreme amount of work experience in the work area.

INSTRUCTIONS FOR COMPLETING INVENTORIES IN WHICH RATINGS WERE PERFORMED ON ANSWER SHEETS AND DATA WERE RECORDED BY KEY PUNCH MACHINE

INSTRUCTIONS

1. To qualify for this survey you must have a duty AFSC of 32530, 32550, 32570, 32530A, 32550A, 32570A, or 32590. In the instructions that follow, you will be asked to report information about your present job; you will also be asked to report information about your entire career. If you have been assigned to your present job less than six weeks, report on your previous job assignment for all items which ask for information about your present job. Check either A or B below:

   A. ☐ I have been assigned to my present job less than six weeks; therefore, I am reporting on my previous job assignment on all items in this inventory which ask for information about my present job.

   B. ☐ I have been assigned to my present job for more than six weeks; therefore, I am reporting on my current job assignment on all items in this inventory which ask for information about my present job.

2. First, fill in the BACKGROUND INFORMATION on pages 4 - 8 of this pamphlet.

3. Then turn to ANSWER SHEET I (FRONT) on page 11 of this pamphlet and turn to page 1 of the Duty-Task Section in the job inventory booklet. As you read the tasks in the booklet, you are to make TIME SPENT (Present Assignment) ratings of the tasks you perform in your present job on ANSWER SHEET I. TIME SPENT (Present Assignment) means the total time you spend doing the task you are rating compared with the time you spend on each of the other tasks in your present job. The 7-point TIME SPENT scale you will use is at the top of the answer sheet. Circle the small "1" beside the number of the task you are rating if you spend very much below average amount of time on the task; circle the "2" for below average time; and so on up to a rating of "7" which you circle if you spend very much above average amount of time on a task. Do not circle numbers for tasks which you do not perform in your present job. When you reach Task #240 turn the answer sheet over and continue your ratings on the back.

4. Now turn to ANSWER SHEET II (FRONT) on page 13 of this pamphlet and back to page 1 of the Duty-Task Section in the job inventory booklet. You are now to make TIME SPENT (Entire Career) ratings on tasks you have performed during your entire career in the Automatic Flight Control Systems Career Ladder, including your present assignment. TIME SPENT (Entire Career) means the total time you have spent doing the task you are rating compared with the time you have spent on each of the other tasks during your entire career. Circle the small "1" beside the number of the task you are rating if you have spent very much below average amount of time on the task; circle the "2" for below average time; and so on up to a rating of "7" which you circle if you have spent very much above average amount of time on a task. Do not circle numbers for tasks you have never performed. When you reach task #240, turn the answer sheet over and continue your ratings on the back.

5. Next, turn to the WRITE-IN sheet on page 15 of this pamphlet. Use the WRITE-IN sheet to write in all the tasks you do or have done which are not listed; do not, however, write in classified tasks.

6. Now turn to ANSWER SHEET III on page 17 of this pamphlet, and to the first page of the WORK AREA section in the job inventory booklet. Each WORK AREA statement is a summary of several of the task statements in the Duty-Task Section. Remembering that you are now dealing with large, summary work statements, make WORK EXPERIENCE ratings by circling numbers on ANSWER SHEET III. Circle a "1" if you have had almost no experience in the WORK AREA you are rating compared to other WORK AREAS, circle a "2" for very little experience; and so on up to "7" which you circle if you have an extreme amount of work experience in the WORK AREA.

INSTRUCTIONS FOR COMPLETING INVENTORIES IN WHICH RATINGS WERE PERFORMED ON ANSWER SHEETS AND DATA WERE RECORDED BY OPTICAL SCANNER

INSTRUCTIONS

1. To qualify for this survey, you must have a Duty AFSC of 36330, 36350, 36370, or 36390, and you must have been in the same duty assignment for at least six weeks.

2. This packet of materials contains a Job Inventory, Background Information Booklet, and two answer sheets. First, pull out the answer sheets, seeing that one is blue and one is red and that the Case Number in the upper right hand corner is exactly the same on both answer sheets. If it is not the same, notify the survey administrator. Next, copy the Case Number to the space marked "Case Nr" in the upper right hand corner of page 1 of the Background Information Booklet.

3. Now fill in the Background Information Booklet up to the page entitled "WRITE-INS".

4. Next, open the Job Inventory, noting that it is a list of task statements arranged under duty titles. The task statements are numbered consecutively from 1 to 381. Take the BLUE answer sheet, noting that it consists of a list of large numbers, each of which is followed by 7 small numbers enclosed in brackets. Each of the large numbers through 381 corresponds to a numbered task statement in the inventory; the small numbers in brackets are used for rating of the tasks. Now read each task statement. If you do that task in your PRESENT JOB, rate it in comparison with other tasks you perform using the 7-point TIME SPENT scale at the top of the answer sheet. Mark the small "1" beside the number of the task you are rating if you spend very much below average amount of time on the task; mark the "2" for below average time; and so on up to a rating of "7" which you mark if you spend very much above average amount of time on the task. Be sure and blacken in the exact space containing the small number in brackets; stay within the bracketed space when you mark. If you change a rating, be sure you completely erase your original mark. DO NOT MAKE STRAY MARKS ON THE ANSWER SHEET. When you reach task #270, turn the answer sheet over and continue your ratings on the back. STOP rating when you reach task #381. Do not mark numbers for tasks which you do not perform in your present job.

5. Next, turn to the WRITE-IN page of the Background Information Booklet. Use the WRITE-IN page to write down all the tasks you do on your PRESENT job which are not listed in the Job Inventory. Do not write in classified tasks.

6. Now, take the RED answer sheet and turn back to the first page of the Job Inventory. Read each task again. You are now asked to rate each task you have performed during your ENTIRE CAREER as a Communications and Relay Center Equipment Repairman, including your present job. Indicate the total time you have spent performing each task compared with the time spent doing all other tasks. Mark "1" for very much below average, "2" for below average, and so on up to "7" for very much above average time spent. Do not mark numbers for tasks which you have never performed. Remember, your ratings on the red answer sheet are for your ENTIRE CAREER–including your present assignment; therefore, all of the tasks you rated on the blue answer sheet will be included among those you mark on the red answer sheet. STOP when you reach task #381. When you are finished, insert the Background Information Booklet and the answer sheets into the Job Inventory and return it to the survey administrator.

APPENDIX II. SAMPLE BACKGROUND ITEMS

BACKGROUND INFORMATION (Continued)

CIRCLE THE HIGHEST EDUCATION LEVEL (OR GED EQUIVALENT) YOU HAVE COMPLETED: (CARD 03: 13-14)

ELEMENTARY				HIGH SCHOOL				COLLEGE				GRADUATE	
05	06	07	08	09	10	11	12	13	14	15	16	17	18

YOUR RESPONSES TO THE FOLLOWING THREE ITEMS WILL BE HELD IN STRICT CONFIDENCE AND WILL BE USED FOR RESEARCH PURPOSES ONLY. (CARD 03: 15-17)

I PLAN TO REENLIST: (15)

- ☐ 1 NO, I PLAN TO RETIRE
- ☐ 2 NO, I PLAN TO SEPARATE WITHOUT RETIREMENT BENEFITS
- ☐ 3 UNCERTAIN, PROBABLY NO
- ☐ 4 UNCERTAIN, PROBABLY YES
- ☐ 5 YES

I FIND MY JOB: (16)

- ☐ 1 EXTREMELY DULL
- ☐ 2 VERY DULL
- ☐ 3 FAIRLY DULL
- ☐ 4 SO-SO
- ☐ 5 FAIRLY INTERESTING
- ☐ 6 VERY INTERESTING
- ☐ 7 EXTREMELY INTERESTING

MY JOB UTILIZES MY TALENTS AND TRAINING: (17)

- ☐ 1 NOT AT ALL
- ☐ 2 VERY LITTLE
- ☐ 3 FAIRLY WELL
- ☐ 4 QUITE WELL
- ☐ 5 VERY WELL
- ☐ 6 EXCELLENTLY
- ☐ 7 PERFECTLY

MY JOB IS LOCATED AT AN INSTALLATION WHICH IS: (CARD 03: 18-19)

- ☐ (18) INSIDE THE CONTINENTAL U.S. (ZONE OF THE INTERIOR)
- ☐ (19) OUTSIDE THE CONTINENTAL U.S. (INCLUDING ALASKA AND HAWAII)

CHECK THE COURSES WHICH YOU HAVE TAKEN: (CARD 03: 20-28)

- (20) ☐ AAR 30100 AIR ELECTRONIC SYSTEMS SUPERVISOR/TECHNICIAN
- (21) ☐ AAR 30171-1 AIRCRAFT ELECTRONIC NAVIGATION EQUIPMENT MAINTENANCE TECHNICIAN (MAP)
- (22) ☐ ABR 30131 AIRCRAFT ELECTRONIC NAVIGATION EQUIPMENT REPAIRMAN
- (23) ☐ ACR 30171 NAVIGATION AIDS TEST STATION TECHNICIAN
- (24) ☐ CDC 30000 COMMUNICATIONS-ELECTRONICS REPAIRMAN
- (25) ☐ CDC 30001 COMMUNICATIONS-ELECTRONICS TECHNICIAN
- (26) ☐ CDC 30151 AIRCRAFT ELECTRONIC NAVIGATION EQUIPMENT REPAIRMAN
- (27) ☐ CDC 30171 AIRCRAFT ELECTRONIC NAVIGATION EQUIPMENT TECHNICIAN
- (28) ☐ OTHER COURSES RELATED TO YOUR CAREER LADDER (SPECIFY):

_____

_____

IN COLUMN (A) CHECK THE SYSTEMS YOU NOW MAINTAIN.
IN COLUMN (B) CHECK THE SYSTEMS IN WHICH YOU HAVE HAD ADVANCED COURSES. (CARD 03: 29-54)

	(A)	(B)
ALTIMETERS	(29) ☐	(30) ☐
IFF-SIF SYSTEMS	(31) ☐	(32) ☐
INSTRUMENT LANDING SYSTEMS	(33) ☐	(34) ☐
LORAN SYSTEMS	(35) ☐	(36) ☐
MARKER BEACONS	(37) ☐	(38) ☐
OMNIRANGE SYSTEMS	(39) ☐	(40) ☐
RADIO COMPASSES	(41) ☐	(42) ☐
RENDEZVOUS BEACONS	(43) ☐	(44) ☐
SEARCH RADAR SYSTEMS	(45) ☐	(46) ☐
SHORAN SYSTEMS	(47) ☐	(48) ☐
TACAN SYSTEMS	(49) ☐	(50) ☐
OTHER (SPECIFY): _____	(51) ☐	(52) ☐
_____	(53) ☐	(54) ☐

CHECK THE MAINTENANCE LEVEL(S) TO WHICH YOU ARE ASSIGNED: (CARD 03: 55-57)

- (55) ☐ DEPOT MAINTENANCE
- (56) ☐ FIELD MAINTENANCE
- (57) ☐ ORGANIZATIONAL MAINTENANCE

BACKGROUND INFORMATION (Continued)

DO YOU FORECAST WEATHER FOR: (CARD 04: 24-27)

OVERSEAS FLIGHTS?	☐ YES	(24)	☐ NO	
24 HOUR GLOBAL MISSIONS?	☐ YES	(25)	☐ NO	
AIRBORNE OPERATIONS?	☐ YES	(26)	☐ NO	
FLYING TRAINING?	☐ YES	(27)	☐ NO	

CHECK YOUR PRESENT WORK ASSIGNMENT: (CARD 04: 28-37)

(28) ☐ COMBAT CENTER OR COMMAND POST
(29) ☐ DETACHMENT LEVEL FORECASTING
(30) ☐ ENVIRONMENTAL TECHNOLOGICAL APPLICATIONS CENTER (ETAC)
(31) ☐ MISSILE LAUNCH SUPPORT
(32) ☐ SAC GLOBAL WEATHER CENTRAL
(33) ☐ SEVERE WEATHER CENTER
(34) ☐ TAC WEATHER CENTER
(35) ☐ WEATHER CENTRAL
(36) ☐ WEATHER RECONNAISSANCE
(37) ☐ OTHER (SPECIFY): _____

CHECK AREAS IN WHICH YOU NEED MORE TRAINING: (CARD 04: 38-57)

(38) ☐ AIR MASSES
(39) ☐ ALGEBRA
(40) ☐ ATMOSPHERIC SOUNDINGS
(41) ☐ COMPUTER METRO.
(42) ☐ CONSTANT PRESSURE ANALYSIS
(43) ☐ FLIGHT HAZARD PHENOMENA
(44) ☐ FRONTS AND CYCLONES
(45) ☐ HEAT
(46) ☐ MATTER AND ENERGY
(47) ☐ MECHANICS
(48) ☐ SATELLITE METRO.
(49) ☐ SLIDE RULE OPERATION
(50) ☐ STREAMLINES AND ISOTACHS
(51) ☐ SURFACE ANALYSIS
(52) ☐ SYSTEMS OF MEASUREMENT
(53) ☐ THE ATMOSPHERE
(54) ☐ TRIGONOMETRY
(55) ☐ VERTICAL CONSISTENCY
(56) ☐ WINDS
(57) ☐ OTHERS (SPECIFY): _____

CHECK THE GRADE OF YOUR IMMEDIATE SUPERVISOR: (CARD 04: 58-70)

(58) ☐ CIV
(59) ☐ 2LT
(60) ☐ 1LT
(61) ☐ CAPT
(62) ☐ MAJ
(63) ☐ LTCOL
(64) ☐ COL
(65) ☐ SGT
(66) ☐ SSGT
(67) ☐ TSGT
(68) ☐ MSGT
(69) ☐ SMSGT
(70) ☐ CMSGT

APPENDIX III. SAMPLE DUTY-TASK LISTS AND SUMMARY STATEMENTS

JOB INVENTORY *(Duty-Task List)* 56XXO	Page 6 of 31 Pages		
LISTED BELOW ARE A DUTY AND THE TASKS WHICH IT INCLUDES. IN COLUMN A, RATE TASKS WHICH YOU PERFORM ON YOUR PRESENT ASSIGNMENT. IN COLUMN B, RATE TASKS WHICH YOU HAVE PERFORMED DURING YOUR ENTIRE CAREER, INCLUDING YOUR PRESENT ASSIGNMENT.	A. TIME SPENT (PRESENT ASSIGNMENT) 1. VERY MUCH BELOW AVERAGE 2. BELOW AVERAGE 3. SLIGHTLY BELOW AVERAGE 4. ABOUT AVERAGE 5. SLIGHTLY ABOVE AVERAGE 6. ABOVE AVERAGE 7. VERY MUCH ABOVE AVERAGE	B. TIME SPENT (ENTIRE CAREER-PAST PLUS PRESENT) 1. VERY MUCH BELOW AVERAGE 2. BELOW AVERAGE 3. SLIGHTLY BELOW AVERAGE 4. ABOUT AVERAGE 5. SLIGHTLY ABOVE AVERAGE 6. ABOVE AVERAGE 7. VERY MUCH ABOVE AVERAGE	
C. PERFORMING GENERAL SUPERVISION			
1. Audit machine run listings			49
2. Establish performance standards and work procedures			50
3. Establish work safety programs			51
4. Evaluate subordinates			52
5. Evaluate suggestions			53
6. Initiate action for changing manning authorizations			54
7. Initiate work order requests			55
8. Inspect supplies and equipment			56
9. Maintain cost accounting on materials and manpower			57
10. Maintain time cards			58
11. Monitor work orders for materials and manpower expenditure			59
12. Perform material deficiency reporting			60
13. Plan use of equipment, space, or supplies			61
14. Plan workloads and schedule work assignments			62
15. Prepare classification actions			63
16. Prepare pre-dispatch security notifications			64
17. Requisition supplies or equipment			65
18. Supervise bench stock ordering and issuing			66

PRB FORM 1

JOB INVENTORY *(Duty-Task List)*	AFSC 325X0/X0A	Page 9 of 19 Pages

LISTED BELOW ARE A DUTY AND THE TASKS WHICH IT INCLUDES. RATE TASKS WHICH YOU PERFORM ON YOUR PRESENT ASSIGNMENT BY CIRCLING NUMBERS ON ANSWER SHEET I. RATE TASKS WHICH YOU HAVE PERFORMED DURING YOUR ENTIRE CAREER BY CIRCLING NUMBERS ON ANSWER SHEET II.

	G. TROUBLESHOOTING COMPONENTS (CONTINUED)
165.	Troubleshoot stall prevention systems
166.	Troubleshoot surface control indicating systems
167.	Troubleshoot systems trial automatic flight control system
168.	Troubleshoot wing heavy systems
169.	Troubleshoot yaw damper systems
	H. MAINTAINING COMPONENTS
170.	Assemble or disassemble automatic celestial sighting and tracking components
171.	Assemble or disassemble automatic flight control components or subassemblies
172.	Assemble or disassemble gyro stabilized magnetic compass components or subassemblies
173.	Assemble rod ends or bearings on mating shafts
174.	Attach components to or remove components from mounting points in shipping containers
175.	Balance amplifier channels
176.	Balance indicators
177.	Bore-sight celestial equipment
178.	Cage gyros
179.	Calibrate AC or DC meter measurements or circuits
180.	Calibrate and swing compass systems
181.	Calibrate generation of DC, AC, and frequency spectrum
182.	Cannibalize parts
183.	Check junction box terminals
184.	Clean or replace motor brushes

PRB FORM I

JOB INVENTORY	AFSC 56XXO	Page 30 of 31 Pages	
LISTED BELOW ARE STATEMENTS DESCRIBING WORK AREAS WHICH SUMMARIZE TASKS FROM THE DUTY-TASK LISTS. RATE THE WORK AREA STATEMENTS ON THE WORK EXPERIENCE SCALE.			WORK EXPERIENCE 1. ALMOST NONE 2. VERY LITTLE 3. LITTLE 4. MEDIUM 5. MUCH 6. VERY MUCH 7. EXTREME AMOUNT
SUMMARY STATEMENTS			
1. Apply herbicides, soil sterilants, and soil fumigants			05
2. Apply pesticides with powered equipment			06
3. Apply pesticides with non-powered equipment			07
4. Collect and identify animals			08
5. Collect and identify plants			09
6. Conduct On-the-Job Training in engineering entomology			10
7. Conduct On-the-Job Training in water and waste processing			11
8. Control use and storage of pesticides			12
9. Evaluate Engineering Entomologists (AFSC 566XO)			13
10. Evaluate Waste and Water Processing personnel (AFSC 563XO)			14
11. Inspect pest control and prevention operations			15
12. Inspect waste processing operation and equipment			16
13. Inspect water processing operation and equipment			17
14. Survey and test for scale and corrosion			18
15. Maintain dispersal and safety equipment			19
16. Maintain sewage collection systems			20
17. Maintain sewage treatment plants			21
18. Maintain water distribution systems			22
19. Maintain water plant equipment			23

PRB FORM 1

APPENDIX IV. SAMPLE ANSWER SHEETS

TIME SPENT RATINGS FOR TASKS IN YOUR PRESENT JOB — **ANSWER SHEET 1 (FRONT)**

DIRECTIONS: RATE THE TIME YOU SPEND ON EACH TASK IN YOUR PRESENT JOB, COMPARED WITH THE TIME YOU SPEND ON ALL OTHER TASKS IN YOUR JOB, BY CIRCLING A NUMBER LIKE THIS: 1 2 3 (4) 5 6 7. USE THE SCALE BELOW.

1	2	3	4	5	6	7
Very much Below average	Much Below average	Slightly Below average	About Average	Slightly Above average	Much Above average	Very much Above average

1 1 2 3 4 5 6 7	41 1 2 3 4 5 6 7	81 1 2 3 4 5 6 7	121 1 2 3 4 5 6 7	161 1 2 3 4 5 6 7	201 1 2 3 4 5 6 7
2 1 2 3 4 5 6 7	42 1 2 3 4 5 6 7	82 1 2 3 4 5 6 7	122 1 2 3 4 5 6 7	162 1 2 3 4 5 6 7	202 1 2 3 4 5 6 7
3 1 2 3 4 5 6 7	43 1 2 3 4 5 6 7	83 1 2 3 4 5 6 7	123 1 2 3 4 5 6 7	163 1 2 3 4 5 6 7	203 1 2 3 4 5 6 7
4 1 2 3 4 5 6 7	44 1 2 3 4 5 6 7	84 1 2 3 4 5 6 7	124 1 2 3 4 5 6 7	164 1 2 3 4 5 6 7	204 1 2 3 4 5 6 7
5 1 2 3 4 5 6 7	45 1 2 3 4 5 6 7	85 1 2 3 4 5 6 7	125 1 2 3 4 5 6 7	165 1 2 3 4 5 6 7	205 1 2 3 4 5 6 7
6 1 2 3 4 5 6 7	46 1 2 3 4 5 6 7	86 1 2 3 4 5 6 7	126 1 2 3 4 5 6 7	166 1 2 3 4 5 6 7	206 1 2 3 4 5 6 7
7 1 2 3 4 5 6 7	47 1 2 3 4 5 6 7	87 1 2 3 4 5 6 7	127 1 2 3 4 5 6 7	167 1 2 3 4 5 6 7	207 1 2 3 4 5 5 7
8 1 2 3 4 5 6 7	48 1 2 3 4 5 6 7	88 1 2 3 4 5 6 7	128 1 2 3 4 5 6 7	168 1 2 3 4 5 6 7	208 1 2 3 4 5 6 7
9 1 2 3 4 5 6 7	49 1 2 3 4 5 6 7	89 1 2 3 4 5 6 7	129 1 2 3 4 5 6 7	169 1 2 3 4 5 6 7	209 1 2 3 4 5 6 7
10 1 2 3 4 5 6 7	50 1 2 3 4 5 6 7	90 1 2 3 4 5 6 7	130 1 2 3 4 5 6 7	170 1 2 3 4 5 6 7	210 1 2 3 4 5 6 7
11 1 2 3 4 5 6 7	51 1 2 3 4 5 6 7	91 1 2 3 4 5 6 7	131 1 2 3 4 5 6 7	171 1 2 3 4 5 6 7	211 1 2 3 4 5 6 7
12 1 2 3 4 5 6 7	52 1 2 3 4 5 6 7	92 1 2 3 4 5 6 7	132 1 2 3 4 5 6 7	172 1 2 3 4 5 6 7	212 1 2 3 4 5 6 7
13 1 2 3 4 5 6 7	53 1 2 3 4 5 6 7	93 1 2 3 4 5 6 7	133 1 2 3 4 5 6 7	173 1 2 3 4 5 6 7	213 1 2 3 4 5 6 7
14 1 2 3 4 5 6 7	54 1 2 3 4 5 6 7	94 1 2 3 4 5 6 7	134 1 2 3 4 5 6 7	174 1 2 3 4 5 6 7	214 1 2 3 4 5 6 7
15 1 2 3 4 5 6 7	55 1 2 3 4 5 6 7	95 1 2 3 4 5 6 7	135 1 2 3 4 5 6 7	175 1 2 3 4 5 6 7	215 1 2 3 4 5 6 7
16 1 2 3 4 5 6 7	56 1 2 3 4 5 6 7	96 1 2 3 4 5 6 7	136 1 2 3 4 5 6 7	176 1 2 3 4 5 6 7	216 1 2 3 4 5 6 7
17 1 2 3 4 5 6 7	57 1 2 3 4 5 6 7	97 1 2 3 4 5 6 7	137 1 2 3 4 5 6 7	177 1 2 3 4 5 6 7	217 1 2 3 4 5 6 7
18 1 2 3 4 5 6 7	58 1 2 3 4 5 6 7	98 1 2 3 4 5 6	138 1 2 3 4 5 6 7	178 1 2 3 4 5 6 7	218 1 2 3 4 5 6 7
19 1 2 3 4 5 6 7	59 1 2 3 4 5 6 7	99 1 2 3 4 5 6 7	139 1 2 3 4 5 6 7	179 1 2 3 4 5 6 7	219 1 2 3 4 5 6 7
20 1 2 3 4 5 6 7	60 1 2 3 4 5 6 7	100 1 2 3 4 5 6 7	140 1 2 3 4 5 6 7	180 1 2 3 4 5 6 7	220 1 2 3 4 5 6 7
21 1 2 3 4 5 6 7	61 1 2 3 4 5 6 7	101 1 2 3 4 5 6 7	141 1 2 3 4 5 6 7	181 1 2 3 4 5 6 7	221 1 2 3 4 5 6 7
22 1 2 3 4 5 6 7	62 1 2 3 4 5 6 7	102 1 2 3 4 5 6 7	142 1 2 3 4 5 6 7	182 1 2 3 4 5 6 7	222 1 2 3 4 5 6 7
23 1 2 3 4 5 6 7	63 1 2 3 4 5 6 7	103 1 2 3 4 5 6 7	143 1 2 3 4 5 6 7	183 1 2 3 4 5 6 7	223 1 2 3 4 5 6 7
24 1 2 3 4 5 6 7	64 1 2 3 4 5 6 7	104 1 2 3 4 5 6 7	144 1 2 3 4 5 6 7	184 1 2 3 4 5 6 7	224 1 2 3 4 5 6 7
25 1 2 3 4 5 6 7	65 1 2 3 4 5 6 7	105 1 2 3 4 5 6 7	145 1 2 3 4 5 6 7	185 1 2 3 4 5 6 7	225 1 2 3 4 5 6 7
26 1 2 3 4 5 6 7	66 1 2 3 4 5 6 7	106 1 2 3 4 5 6 7	146 1 2 3 4 5 6 7	186 1 2 3 4 5 6 7	226 1 2 3 4 5 6 7
27 1 2 3 4 5 6 7	67 1 2 3 4 5 6 7	107 1 2 3 4 5 6 7	147 1 2 3 4 5 6 7	187 1 2 3 4 5 6 7	227 1 2 3 4 5 6 7
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29 1 2 3 4 5 6 7	69 1 2 3 4 5 6 7	109 1 2 3 4 5 6 7	149 1 2 3 4 5 6 7	189 1 2 3 4 5 6 7	229 1 2 3 4 5 6 7
30 1 2 3 4 5 6 7	70 1 2 3 4 5 6 7	110 1 2 3 4 5 6 7	150 1 2 3 4 5 6 7	190 1 2 3 4 5 6 7	230 1 2 3 4 5 6 7
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39 1 2 3 4 5 6 7	79 1 2 3 4 5 6 7	119 1 2 3 4 5 6 7	159 1 2 3 4 5 6 7	199 1 2 3 4 5 6 7	239 1 2 3 4 5 6 7
40 1 2 3 4 5 6 7	80 1 2 3 4 5 6 7	120 1 2 3 4 5 6 7	160 1 2 3 4 5 6 7	200 1 2 3 4 5 6 7	240 1 2 3 4 5 6 7

TIME SPENT RATINGS FOR TASKS PERFORMED DURING YOUR ENTIRE CAREER **ANSWER SHEET II (FRONT)**

DIRECTIONS: RATE THE TIME YOU HAVE SPENT ON EACH TASK DURING YOUR ENTIRE CAREER, COMPARED WITH THE TIME YOU HAVE SPENT ON ALL OTHER TASKS DURING YOUR ENTIRE CAREER BY CIRCLING A NUMBER LIKE THIS: 1 2 3 (4) 5 6 7. USE THE SCALE BELOW.

1	2	3	4	5	6	7
Very much Below average	Much Below average	Slightly Below average	About Average	Slightly Above average	Much Above average	Very much Above average

1	1 2 3 4 5 6 7	41	1 2 3 4 5 6 7	81	1 2 3 4 5 6 7	121	1 2 3 4 5 6 7	161	1 2 3 4 5 6 7	201	1 2 3 4 5 6 7
2	1 2 3 4 5 6 7	42	1 2 3 4 5 6 7	82	1 2 3 4 5 6 7	122	1 2 3 4 5 6 7	162	1 2 3 4 5 6 7	202	1 2 3 4 5 6 7
3	1 2 3 4 5 6 7	43	1 2 3 4 5 6 7	83	1 2 3 4 5 6 7	123	1 2 3 4 5 6 7	163	1 2 3 4 5 6 7	203	1 2 3 4 5 6 7
4	1 2 3 4 5 6 7	44	1 2 3 4 5 6 7	84	1 2 3 4 5 6 7	124	1 2 3 4 5 6 7	164	1 2 3 4 5 6 7	204	1 2 3 4 5 6 7
5	1 2 3 4 5 6 7	45	1 2 3 4 5 6 7	85	1 2 3 4 5 6 7	125	1 2 3 4 5 6 7	165	1 2 3 4 5 6 7	205	1 2 3 4 5 6 7
6	1 2 3 4 5 6 7	46	1 2 3 4 5 6 7	86	1 2 3 4 5 6 7	126	1 2 3 4 5 6 7	166	1 2 3 4 5 6 7	206	1 2 3 4 5 6 7
7	1 2 3 4 5 6 7	47	1 2 3 4 5 6 7	87	1 2 3 4 5 6 7	127	1 2 3 4 5 6 7	167	1 2 3 4 5 6 7	207	1 2 3 4 5 6 7
8	1 2 3 4 5 6 7	48	1 2 3 4 5 6 7	88	1 2 3 4 5 6 7	128	1 2 3 4 5 6 7	168	1 2 3 4 5 6 7	208	1 2 3 4 5 6 7
9	1 2 3 4 5 6 7	49	1 2 3 4 5 6 7	89	1 2 3 4 5 6 7	129	1 2 3 4 5 6 7	169	1 2 3 4 5 6 7	209	1 2 3 4 5 6 7
10	1 2 3 4 5 6 7	50	1 2 3 4 5 6 7	90	1 2 3 4 5 6 7	130	1 2 3 4 5 6 7	170	1 2 3 4 5 6 7	210	1 2 3 4 5 6 7
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15	1 2 3 4 5 6 7	55	1 2 3 4 5 6 7	95	1 2 3 4 5 6 7	135	1 2 3 4 5 6 7	175	1 2 3 4 5 6 7	215	1 2 3 4 5 6 7
16	1 2 3 4 5 6 7	56	1 2 3 4 5 6 7	96	1 2 3 4 5 6 7	136	1 2 3 4 5 6 7	176	1 2 3 4 5 6 7	216	1 2 3 4 5 6 7
17	1 2 3 4 5 6 7	57	1 2 3 4 5 6 7	97	1 2 3 4 5 6 7	137	1 2 3 4 5 6 7	177	1 2 3 4 5 6 7	217	1 2 3 4 5 6 7
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32	1 2 3 4 5 6 7	72	1 2 3 4 5 6 7	112	1 2 3 4 5 6 7	152	1 2 3 4 5 6 7	192	1 2 3 4 5 6 7	232	1 2 3 4 5 6 7
33	1 2 3 4 5 6 7	73	1 2 3 4 5 6 7	113	1 2 3 4 5 6 7	153	1 2 3 4 5 6 7	193	1 2 3 4 5 6 7	233	1 2 3 4 5 6 7
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40	1 2 3 4 5 6 7	80	1 2 3 4 5 6 7	120	1 2 3 4 5 6 7	160	1 2 3 4 5 6 7	200	1 2 3 4 5 6 7	240	1 2 3 4 5 6 7

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